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ABSTRACT

Originally developed for the Department of Defense Schools (DoDDS) system, this learning package on computer use in reading is designed for teachers who wish to upgrade or expand their teaching skills on their own. The package includes an overview of the project; a comprehensive search of the ERIC database; a lecture giving an overview on the topic; copies of any existing ERIC/RCS publications on the topic; a set of guidelines for completing a goal statement, a reaction paper, and an application project; and an evaluation form. (KEH)

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Learning Package #27

**The Computer as an Aid
to Reading Instruction**

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OVERVIEW

ERIC/RCS Learning Packages contain just what the practitioner needs for staff development workshops. Workshops can begin with an overview lecture , continue through readings and discussion material, and end with research projects and an annotated bibliography for further research.

Each learning package contains (1) a topic overview: a four-to-six page stage-setter; (2) in most cases, a digest of research: an ERIC summary of research on the topic written by a specialist; (3) a goal statement and a survey form; and (4) an extensive annotated bibliography of ERIC references.

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The Computer as an Aid to Reading Instruction

by Marge Simic

Lecture

Discussions concerning computer use in education have rapidly passed through a number of phases. The first phase centered on the need for "computer literacy," generally defined as computer awareness and computer programming. At the height of the computer literacy debate, emphasis shifted to the role of the computer as a tool, and as a method for teaching problem solving. Most recently, attention among educators has turned to yet a third phase. This third phase addresses issues related to computer applications in support of the curriculum.

Research studies (Reinking, 1988) indicate clearly that computer instruction is effective for a wide variety of reading skill and concept areas. The level of popularity of computer-based instruction in reading may vary, but few will dispute the fact that computers have won a permanent place in the classroom. The most common concerns of educators now have to do with the effectiveness of computer-based education, and with the appropriateness of the many possible roles computers can play in language arts instruction.

Teachers are reacting to the overuse and misuse of direct instruction and subskill drills by spending increased amounts of classroom time applying holistic approaches to reading and

language arts. This movement, whether it be called an integrated language arts or a whole language movement, reflects a healthy concern that children learn language abilities in meaningful contexts that provide motivation for a lifelong love of reading and writing.

Judith Newman (1986) cautions that there is not one "whole language approach." Instead, the term represents a set of beliefs about how language is acquired, with corresponding principles that guide teachers in their instruction.

Considering these reactions, the varying beliefs of educators, and the present thrust in education to provide effective utilization of computers in the classroom, the emphasis is not on using computers to increase reading and writing achievement. Instead, the emphasis is on whether teachers use computers for meaningful reading and writing instruction, or are locked into computer-based drill and practice software. This lecture will focus on: 1) why reading, writing, and computing are linked, and 2) how to integrate computers into reading/writing instruction.

Reading, Writing, and Computing

The link between reading and writing processes has recently generated a great deal of research. The result is that the two have come to be viewed as "flip sides of the same coin" (Eckhoff, 1983). Writing well depends very much on reading good

writing. Computing has become part of the reading/writing process.

One of the few areas where there is evidence of the computer expanding learning is in the area of writing and reading (Mason, Blanchard, and Daniel, 1983). All three processes -- reading, writing, and computing -- are complex intellectual activities that involve gathering, organizing, and producing information. If one process is neglected, there seems to be a negative effect on the others.

Writing, reading, and computing are being linked in instructional practice. As children use the computer to move from the simple drawings of letters, to the revision of inner speech, to formal essays, their ability to express themselves is dependent upon their ability to develop related technology-based language arts concepts.

Reading and writing are related and different. Reading is a receptive process by which meaning is constructed from printed materials. Writing is an expressive process by which thoughts and ideas are worked and reworked to construct meaning and then printed (Calkins, 1986). Putting them together with computing forms a highly supportive system. All three are processes that help us construct and extend meaning.

Reading, writing, and computing share common skills. Reading deals with printed or written words, writing with the

production of these words, and computing with both. These skills include visual, auditory perception, thinking, and comprehension. Visual perception allows the reader and writer to realize that many complex letter shapes fit together to form words that form meaningful phrases and sentences. Auditory perception involves taking the sounds in the language and relating them to the different letters. Computing increasingly involves visual and auditory skills.

Thinking enters the reading process when a student analyzes print and extracts meaning. When writing, a student must use organized thoughts and ideas to develop a conceptual image, and then express this image. Computing involves both.

Comprehension is dependent on the mix of visual, auditory, and cognitive processes. Although comprehension is the end result of reading, it also plays a part in the writing process. Without comprehension, not much reading or writing can take place. A student must first understand the purpose for writing. For the written work to make sense, the student must continue to understand and logically express his/her thoughts. As the level of students' reading comprehension increases, so does writing complexity.

The computer has become an ally in teaching comprehension. Research (Eckhoff, 1983) indicates that reading, writing, and computing share common skills, and that one

reinforces the others. Students who perform well in one area tend to do well in the others. Students who read and write well are most effective in utilizing the computer. But more encouraging than ever is that the computer has become a stimulating and motivating source for the child who has difficulty and does not perform well in reading and writing.

Children must hear and read literature in order to write well. Next to direct experience, the reading the children do (either on or off the computer) is usually their most important source of new words and ideas. A well-presented story can do much to motivate students to write as well as strengthening writing skills, vocabulary development, sequential order, organization and creativity. The interactive possibilities presented by technology add a unique dimension through which children "enter" the story and interact with the characters.

New computer-controlled video disks make it possible to store original materials in remote locations. Any number of students, in different schools, can obtain simultaneous access to the same materials. Books are entered into these systems with a scanner that can put 100 books into an inch of shelf space. Unlike conventional books, these never wear out. Pictures can be stored along with the printed word. This results in new forms of video-print interaction which hold unmeasured potential for altering the reading process.

The reading and writing connection itself is enhanced through the use of computer technology. When composing, the student is engaged in a writing-reviewing (reading) process. Each time the student presents written information, it must be read back silently and reviewed on the monitor to insure proper structure. Even the technology now available in most schools will allow the student to interact with a children's story, or write and revise a composition of their own. Whether it is prewriting, writing, or revising, the technology has become an integral part of the process.

Two of the more disconcerting problems facing teachers today are how to approach the new computer-based learning technology (the "new literacy"), and how to overcome student indifferences or sheer rejection of reading and writing (the "old literacy"). As educators, we now have the ability to reach toward a fusion of a rich intellectual invention, the computer, and a powerful medium for the use of language, which is literature. With computers, we can make the affective impact of literature immediate. People hear and see things and react to them in a different manner than when print is used alone. The result can promote an individual's understanding, interest in, and desire to read (Adams, 1986).

The research suggests (Strickland, 1987) that computer-mediated text may enhance comprehension among younger and

poorer readers by stimulating more metacognitive activity. Interaction with the computer appears to provide a stimulus for the reader unmatched by conventional print technology. Print size may be increased, speed may be altered, and graphics can be created when using computer-mediated text. The control of text information can reside with either the student or computer. This allows the students to interact with the computer, which provides manipulation of and interaction with the text. Information may be externalized into the background knowledge, important aspects can be pointed out, and checking for information is reinforced. Students have immediate access to: 1) definition of key vocabulary; 2) a simpler, less technical version of the text; 3) supplemental background information; and 4) pictorial presentation of text (Reinking, 1985).

Integrating Computers In Classroom Instruction

Teachers want their students to become more fluent writers and more attentive readers. For many teachers, traditional texts and methods are not enough. An effective use of the computer can help. It can serve as a patient teacher-assistant, guiding students through efficient reading-writing strategies, encouraging reading-writing connections, and providing individualized skill training in vocabulary and spelling.

While the first software efforts in the language arts field were disappointing, more and more of the current software packages

can indeed help teachers reach their objectives. By choosing software that supports their curriculum, their students' needs, and their preferred teaching style, elementary reading/language arts teachers can spend more time guiding individual students and small groups, and less time presenting unproductive lessons in front of the entire class.

Using a peer-tutoring model for computer literacy requires a minimal investment of the teacher's classroom time. The teacher, of course, needs to be familiar with the chosen word processor first, but any word processor that the teacher is comfortable with is likely to satisfy students. Just teach the commands as the students need them. A small group of students can learn quickly from the teacher, or they can use the tutorial that comes with some word processing programs.

Word processing can not only be a great time saver, but also a creative tool. Students can use the word processor to create a class or school newspaper, write letters to pen pals, write book reviews, make books for younger children, create their own stories and poems, write reports, or engage in any number of other activities. Word processing is a tool that can enhance all subject areas, so do not just limit it to the language arts.

During the last ten years, researchers have learned much about the reading and writing process. Research (Calkins, 1986) reveals that students learn how to write best when they focus on

ideas first and technique later. Similarly with reading. Students who are encouraged to push on, even if they do not know every word, tend to become better readers -- ones who actively create meaning by thinking and responding to the words on the page.

Although there is no substitute for reading and writing in context, students need ongoing supplementary practice in discrete reading and writing skills. Again the computer can help. The market is abundant with drill and practice type software. Finding appropriate skill-building software that has teacher utility options allow the teacher to add new information that makes the skill-building software more compatible with the individual needs of the students.

The skills should reinforce what is introduced or emphasized in the classroom instruction. Skill-building software should be interpreted exactly as it is titled. The teacher provides the "foundation" for learning through initial instruction and the skill-building programs "build" on that foundation. Courseware must supplement not supplant classroom instruction.

After finding a word processor appropriate for their students' needs, teachers must work on integrating computer related activities into the curriculum. The software provides assistance, but the teacher remains in control, helping students move through their assignments and facilitating peer review and group work. For teachers who want to provide students with

supplementary skill-building software, effective products are available. The correct choice depends on the teacher, the students, and the curriculum.

The following guidelines serve to summarize the information and may also be used as a checklist to help teachers of the language arts match their use of computers with what is known about the reading/writing process. We hope that the checklist will be used in a context where students are given opportunities to work in all the various computer modes: tool, tutor, and tutee.

Guidelines for Computers and Reading

1. Computer instruction in reading should focus on meaning and stress reading comprehension.
 - a. Learners should have opportunities to work with whole, meaningful texts. Programs that offer learners a chance to process large chunks of related text, rather than bits and pieces of unrelated language fragments, allow students to use and extend what they know about reading comprehension.
 - b. Learners should have opportunities to work with word-recognition programs that stress the use of word meanings in conjunction with phonics and structural analysis. Care must be taken to make sure that, when programs feature the study of individual words and phrases, they are offered within a

contextual framework that help them make sense to the learner. Assessment programs for teachers should also be provided in meaningful context.

- c. Learners should have the opportunities to apply the skills being taught in some meaningful way. Programs that deny the learner an opportunity to make use of what is being "taught" are merely assessment tools and do little to further the learner's growth.
- d. Learners should have opportunity to work with computer materials that use content and language that are within the range of their conceptual development. Tasks should be challenging but not frustrating. Student interests, previous experiences, and purpose play a role in determining whether or not a computer task is comprehensible and worthwhile.

2. Computer instruction in reading should foster active involvement and stimulate thinking.

- a. Learners should have opportunities to discuss the purpose of the computer task or program as well as its nature. They should be aware not only of what they are supposed to do but also of why doing it is important.

- b. Learners should have opportunities to make decisions that control or influence the computer task. Programs that build in opportunities for students to make choices and test predictions help them learn to think and act on their own rather than merely react to someone else's thinking.
 - c. Learners should have opportunities to monitor their own learning. Tasks that offer students opportunities to self-check and correct their own errors support the development of independent learners.
- 3. Computer instruction in reading should support and extend students' knowledge of text structures.
 - a. Learners should have opportunities to encounter a wide variety of text structures upon which to apply and refine their comprehension skill. A variety of narrative and expository structures should be provided. Commercially-prepared, teacher-authored, and student-authored materials also should be included. Reading instruction can take place through all kinds of computer-based materials, not merely those designated specifically for that purpose.
 - b. Learners should have opportunities to experiment with text in creative ways to suit their purposes. When students reorganize a story or an informational

piece on the computer, they are employing and strengthening what they know about the structure of texts.

4. Computer instruction in reading should make use of content from a wide range of subject areas.
 - a. Learners should have opportunities to use the computer as a means of applying reading strategies to all areas of the curriculum. Programs related to science, social studies, and math require the use of strategies for reading comprehension. Unless students are being helped to use what they know about reading comprehension under these circumstances, they are not progressing as competent readers.
 - b. Learners should have opportunities to use the computer in conjunction with other modes of instruction. The computer should not operate as a separate and isolated means of learning. Its use should be integrated with that of books and other learning materials. Students need to think of the computer as one additional means of sharing and retrieving information and practicing skills in interesting and meaningful ways.

5. Computer instruction in reading should link reading and writing.

Learners should have opportunities to create text with the computer for sharing and use by others. When students enter information into the computer for someone else to retrieve and use, they must compose with the reader in mind. This frequently involves making explicit use of what they know about what makes a text comprehensible. Revision and proofreading strategies clearly involve the combined application of reading and writing skills.

References

- Adams, D. M. (1986). Interactive Children's Literature. *Reading Horizons*, Summer.
- Belajthy, E. (1988). Computers and Instruction: Implications of the Rising Tide of Criticism for Reading Education. *Reading Research and Instruction*, 28, (1), 49-59.
- Belajthy, E. (1987). What Does Research on Computer-Based Instruction Have to Say to the Reading Teacher? *Reading Research and Instruction*, 27, (1), 54-65.
- Calkins, L. (1986). The Art of Teaching Writing. Portsmouth, NH: Heinemann.
- Eckhoff, B. (1983). How Reading Affects Children's Writing, *Language Arts Journal*, 60, (5).
- Kaake, D. M. (1983). Teaching Elementary Age Children Touch Typing as an Aid to Language Arts Instruction. *The Reading Teacher*, 36, 640-44.
- Mason, G., Blanchard, J., and Daniel, D. (1983). Computer Applications in Reading. Newark, DE: International Reading Association.
- Newman, J. M. (1986). Whole Language: Theory In Use. Portsmouth, NH: Heinemann.
- Reinking, D. (1985). The effects of computer-mediated text on measures of reading comprehension reading behavior. *Reading Research Quarterly*, 20, 536-552.
- Reinking, D. (1988). Computer-mediated text and comprehension differences: The role of reading time, reader preference, and estimation of learning. *Reading Research Quarterly*, 23 (4), 484-98.
- Strickland, D., Feeley, J., and Wepner, S. (1987). Using Computers in the Teaching of Reading. NY: Teachers College Press.

Task #1

Goal Statement

Your Name: _____

Course #: _____

Learning package: _____

The purpose of writing a goal statement is to create an expectation for yourself, to establish a purpose that you can check when you have finished reviewing the package of materials. It should be used in conjunction with your reaction statement--the commentary that you will make after working your way through the materials in the learning package.

Directions: This is a pre-reading activity. Think about the topic of this package and then look at the various materials, primarily reviewing their headlines and subheads. What does that review prompt you to want to discover through this package?

Write a goal statement of no more than one paragraph that includes the questions that you want answered or the kinds of applications that you hope the package will help you accomplish in your work. Attached please find examples of representative goal statements submitted by former students.

Mail a copy of your goal statement to your instructor. Please keep a copy for yourself because your reaction statement should be based partly on the goal statement.

My Goal Statement for this Package

Please mail a copy of this form to:

Carl B. Smith
150 Smith Research Center
Indiana University
Bloomington, IN 47408-2698

Examples of Goal Statements

It is my expectation that this learning package will direct me in new directions so that I may improve my instruction in the area of vocabulary. I would like to know when it is best to introduce new vocabulary words. I would also like to gain information about new methods one might use when introducing new vocabulary. I expect to read about some of the newest research related to vocabulary instruction. It is also expected that tested methods will be described and examined. I would hope that these articles would help me improve how I teach so that my students will benefit and become better readers.

Following the study of this package, I expect to increase my understanding of computer usage in reading development, learn how to integrate computers into reading and writing instruction for learning impaired students, and make decisions on the usefulness of computer games in the classroom.

Following completion of this package I intend to:

- 1) Identify the components of a formal reading program evaluation.
- 2) Analyze the characteristics of an effective reading program.
- 3) Develop evaluation strategies that will improve the monitoring of my program objectives.

Task #2

Reaction Statement

You are asked to type a four-page reaction to this learning package as a way of firming up your sense of what you find interesting, important, or beneficial in this group of materials. You should construct this reaction with your previously established goal statement in mind.

Given below are a number of prompts to indicate the kinds of questions that you might wish to answer in developing this reaction. You may use other questions than those that are here listed. We anticipate that your reaction will be approximately four typewritten, double-spaced pages. Please use the following format in heading your paper.

Reaction

Your Name: _____

Course #: _____

Learning Package: _____

Reaction Prompts

1. Were your goals realized, and how do you know? (Refer to your goal statement.)
2. What important or beneficial ideas did you find in these materials? (Please cite the articles.)
3. Are there trends or concerns in the materials that bother you? Are there those that you agree with? Discuss. (Please use the annotated bibliography and cite ideas from it.)
4. What ideas did you want to try in your daily work world? Describe how you could apply these ideas?

Application Project

If you decide to use this topic for one of your two application projects, you may want to spend more time thinking about ways that you could explore one or more of these ideas in your work.

When you have finished your statement, please mail it to:

Carl B. Smith
150 Smith Research Center
Indiana University
Bloomington, IN 47408-2698

Task #3

Application Project

As you select your two application projects, use the following guidelines:

1. **Formulate a question** that you would like to answer regarding this topic. (For example, can my slow readers use some of the self-monitoring strategies discussed in these materials?) A question often helps to clarify the kinds of information that you will collect or the kinds of evidence that you will use to convince a reader that you are pursuing an interesting question.
2. **Describe with as much detail** as is needed for a reader to understand what you did, what materials you used, what major procedures you used, what evidence you were looking for, in order to answer your question.
3. **Gather evidence** from your students or from teachers to show samples of the kinds of work or the kinds of interactions that were taking place. These samples may be your written observations, sample student papers, photographs, activity sheets, book titles, statistical data, or any other kind of evidence that demonstrates the reality of your inquiry.
4. **Write a summary** of your plan and of your conclusions. The summary should be coherent and clear so a person who was not on site can understand what you attempted and can appreciate the conclusions that you drew.
5. **Send a report** that includes a summary of your plan, sample evidence of what you found, a brief analysis of the evidence, and the conclusions that you
6. **Provide a cover page** that gives your name, address, course number, topic of learning package, and topic of your project. We will mail you a critique of your work. Send your report to:

Carl B. Smith
150 Smith Research Center
Indiana University
Bloomington, IN 47408-2698

Course Number _____

Date _____

Package Title _____

Statements	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1. This package will help me do my job better.					
2. The pace of the package was too fast.					
3. The package's directions were confusing.					
4. It was easy to follow the directions given in the package.					
5. The package was too easy.					
6. The package was too long.					
7. The package should include more articles and documents to read.					
8. I didn't know the meaning of many words used in the package.					
9. The lecture explicated the topic of the package.					
10. The package's objectives were clear from the start.					
11. The package's teaching points were clear.					

What did you like best about the package?

What did you like least about the package?

How would you improve the package?

Please list other topics you would be interested in studying through our program.

Name (optional)_____

Position_____

Years Taught_____

Please mail a copy of this form to:

Carl B. Smith
150 Smith Research Center
Indiana University
Bloomington, IN 47408-2698

Software Evaluation for the Teacher of the English Language Arts

Sifting good software from bad is not difficult, but it is not like selecting textbooks. If you use the same strategies, you may waste both time and money. You can flip through many textbooks and get a good idea of their worth because you are sophisticated about what you are looking for. Also, when teaching with textbooks, you are still a major part of the show—preparing, emphasizing, explaining, highlighting, filling in the gaps, and making up for weaknesses. The book will not slam shut if a student forgets to turn the pages in a certain manner. A computer program, however, can create frustration and confusion for the student. It can, in effect, “break down” if it is not thoughtfully designed. Therefore, teachers must learn selection strategies in order to become sophisticated consumers.

What Are the Initial Considerations?

Never buy software without conducting a thorough examination of it. You should look at two parts of the software: the documentation and the actual, running program. The documentation is the written explanation that comes with the computer disk. Beware of any software that does not have such documentation, as lack of documentation often means the person who produced the program didn't organize it well or didn't bother with explanatory material.

The documentation should help answer some basic questions. Are the stated objectives of the program something you need for your students? What equipment specifications does the program take? If the program needs 64,000 units of memory and your computers have only 48,000, do you want to buy additional memory chips for all your machines so that this program will run? Does the success of the program depend on color—if so, do you have color monitors? Trying to distinguish the sentences written in red from the ones in blue on a black and white screen is tiresome, if not impossible. Does the program need disk drives or cassette players? If disk drives, how many? Is one of the strengths of the program that it will print out a paper copy of the student's work? If it is and you either don't have access to a printer or have one printer for thirty students, maybe the program isn't for you.

When First Viewing the Program, What Should You Look for Concerning Organization and Structure?

Suppose you like the subject matter, accept the stated objectives, and have the equipment. It's time to examine the program for the first run-through—and this ought to be the

first of several if you are going to be a competent consumer. Concentrate on three areas during the first run: Does the program carry out its stated objectives? Is it user-friendly? Does it have sound pedagogical structure?

You probably do not need help in deciding if the program carries out its stated objectives, because that's a regular part of teaching. But what about user friendliness? Is the program easy to use? Are there clear directions, or do you need technical knowledge about computers to make this program work?

In addition, examine the program for ease of operation. If you have to press the return key after your input, does it tell you to do so? Is the program menu driven? That is, do you start out with a page of choices, or do you have to start in the same place every time—reading directions at the beginning? What about a way to quit if you get bogged down or must leave? Can you get out of the program short of pulling the plug? Can you go back to see those directions you thought you didn't need in the first place, or thought that you'd remember after a quick read-through?

What Should I Know about Feedback?

It's important to look at both positive and negative feedback. These terms do not mean good and bad. Rather, they refer to the feedback given for correct and incorrect responses. Is the feedback appropriate? Too much positive feedback isn't useful. Some programs go too far, using the student's name and a string of superlatives to reward a correct response: “What a marvelous job, Charlie. You sure know your stuff.” This approach is boring and often condescending. Field studies show that a simple “Okay” or “Correct” is often enough.

Moreover, does the negative feedback help point students in the right direction? Computers can handle many possible answers in many forms in a helpful way—if the programming was done by a competent programmer and a designer who knows the content. Feedback that says “Think!” is useless to students who thought they were thinking but missed the answer anyway. A more helpful feedback design is the corrective feedback paradigm (CFP). This system reruns missed questions through a questioning sequence at specified intervals to reinforce retention.

Finally, there are some programs that won't let students out until they have answered five or ten or fifteen questions correctly in a row. Some students just can't do that, and they get so frustrated by a lack of success that they quit. Keep this in mind as you evaluate a program. In addition, remember to check whether the program keeps track of the student's work, giving some type of summary and evaluation at the end.

What Pedagogical Issues Should I Consider During the First Viewing?

There are several important issues. For example, is the sequencing pedagogically logical? Does the program permit the student to interact—think, respond, wonder, predict—or does the student just read an electronic workbook? (You can buy quite a few workbooks for the cost of one piece of software, not to mention the cost of the computer.) The more interactive the program, the better. Get students involved in this evaluation and make sure that computer involvement is worthwhile for both their education and their time.

Look carefully at the language: Is it too formal, or too laden with slang? Is it so dependent on fad that it will be outdated in two years? Finally, do graphics and/or sound add anything to the program, or are they window dressing?

What Should I Look for in a Second Viewing?

If the program seems to pass the test so far—you like the objectives, it's user-friendly, and the pedagogy is good—it's time for a second round of assessment, in which you consciously make errors. This may seem hard. Teachers like to do things correctly and neatly. On this run-through, however, you'll need to force yourself to be a confused and/or slow learner.

Find out what happens if you just hit the return key with no input. Can you do it three times, get the correct answer, and page on through or do you have to make an attempt to answer? What does your program do with perceptually correct but literally incorrect answers—especially misspellings, parts of names, or abbreviations? What does the program do with a totally "off-the-wall" response—treat it as such or say, "Wow, that's interesting, Johnnie"? What happens if you hit the escape key, hit many keys simultaneously, or randomly tap the keyboard? Try it. If the program is capable of handling such things, it's said to be "bulletproof." If the program isn't designed to handle accidental or intentional problems, it's going to backfire on some students.

If you look at these aspects, you will have given the program a good preview. If you still like the program at this point, then it's time to turn the program over to some of your students. Choose at least a couple—the quick/bright and the slow/unmotivated—and get their opinions. Their actions and reactions will reveal much more about the program.

What Should I Know about Dealing with Software Publishers?

If publishers will not let you inspect programs on a trial basis, beware but remember that they are not entirely at fault. Software development, especially well-done material, costs money. If publishers send out disks for preview and you copy them and send them back, they stand to lose a great deal of

money. So allow for the publisher's qualms when making arrangements for previewing. Send a letter guaranteeing that you will not copy illegally. In addition, request to see the real program rather than shortened preview disks. If they won't send just the disks, ask them to send a sales representative to do a demonstration and then try to get time for your own evaluation. Sometimes several schools can join together and invite several publishers to put on a software fair with a wider range of materials. It takes planning, but it is a way to see the material.

Another factor to check on is how to get a backup disk or multiple copies. You should be given either a backup disk or provision to make your own. Also, how does the publisher deal with your need for five, ten, fifteen or thirty copies for your district? Paying the full retail price for each one could wipe out a budget for software on one item. Negotiate a reasonable, nominal fee for additional or replacement copies. In school settings, disks are sometimes lost, stepped on, or otherwise damaged. In addition, you should investigate the publisher's policy if, for some reason you didn't foresee, the program just will not work out. Do not, however, make the return option an excuse for weak evaluation practice on your part.

Finally, deal openly and honestly with publishers and expect to be treated in the same manner. Remember, they are somewhat new at this also. The copyright laws are ambiguous on computer materials and business policies and practices are just being formed. Publishers and educators must work together to establish a smooth working relationship. Tell your colleagues and educators in other districts about publishers who are good to work with. Set up a network of information.

In addition, make use of general professional resources, like reviews of software from EPIE (Educational Products Information Exchange) and MicroSift. Read software reviews and gather ideas about the instructional use of the computer in journals like *Language Arts*, *English Journal*, and *Computers in Reading and Language Arts*. But don't let others' ideas take the place of your own hands-on assessment. The ideas in this digest, along with documents like "Guidelines for Review and Evaluation of English Language Arts Software" (National Council of Teachers of English 1984) can help you to choose the best software for use with your students.

Pamela Janello
University of Illinois

References

- Educational Products Information Exchange Institute (EPIE), 475 Riverside Drive, New York, New York 10027.
- MicroSift, c/o Northwest Regional Educational Laboratory, 300 S.W. Sixth Avenue, Portland, Oregon 97204.
- National Council of Teachers of English (NCTE), 1111 Kenyon Road, Urbana, Illinois 61801.



A Product of the ERIC Clearinghouse on Reading
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THE COMPUTER AS AN AID TO READING INSTRUCTION

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Sample ERIC Abstract

AN ED289160
 AU Binkley, Marilyn-R.; And-Others
 TI Becoming a Nation of Readers: What Parents Can Do.
 CS Heath (D.C.) and Co., Lexington, Mass.; Office of Educational Research and Improvement (ED), Washington, DC.
 PY 1988
 AV What Parents Can Do, Consumer Information Center, Pueblo, CO 81009 (\$.50).
 NT 40 p.; For Becoming a Nation of Readers: The Report of the Commission on Reading, see ED 253 865.
 PR EDRS Price - MF01/PC02 Plus Postage.
 DE Beginning-Reading; Literacy-Education; Parent-Attitudes; Parent-Child-Relationship; Preschool-Children; Primary-Education; Reading-Aloud-to-Others; Reading-Attitudes; Recreational-Reading; Written-Language
 DE *Literacy-; *Parent-Influence; *Parent-Participation; *Reading-Instruction; *Reading-Processes
 ID Reading-Motivation
 AB Intended for parents and based on the premise that parents are their children's first and most important teachers, this booklet is a distillation of findings from the 1984 report of the Commission on Reading, "Becoming a Nation of Readers." The introduction reiterates the Commission's conclusions (1) that a parent is a child's first tutor in unraveling the puzzle of written language; (2) that parents should read to preschool children and informally teach them about reading and writing; and (3) that parents should support school-aged children's continued growth as readers. Chapter 1 defines reading as the process of constructing meaning from written texts, a complex skill requiring the coordination of a number of interrelated sources of information. Chapter 2, on the preschool years, focuses on talking to the young child, reading aloud to the preschooler, and teaching children about written language. The third chapter, on beginning reading, counsels parents on what to look for in good beginning reading programs in schools, and how to help the child with reading at home. The fourth chapter, on developing readers and making reading an integral part of learning, offers suggestions for helping the child succeed in school and for encouraging reading for fun. The afterword calls on teachers, publishers, and school personnel, as well as parents, to participate actively in creating a literate society. The booklet concludes with a list of organizations that provide practical help or publications for parents.

Interpretation of ERIC Abstract Field Identifiers

AN ERIC accession number (Use this number when ordering microfiche and paper copies.)
 AU Author(s)
 TI Title
 CS Corporate source
 PY Actual or approximate publication date
 AV Source and price (availability)
 NT Pagination and additional information (such as legibility or related documents)
 PR Indicates availability of document from the ERIC Document Reproduction Service
 DE Descriptors-indexing terms from the *Thesaurus of ERIC Descriptors* which indicate important concepts in the document
 ID Identifiers-indexing terms not included in the *Thesaurus of ERIC Descriptors*
 AB Summary

AN: EJ337362
 AU: Adams,-Dennis-M.
 TI: Interactive Children's Literature: Moving from Print to Electronic Literacy.
 PY: 1986
 JN: Reading-Horizons; v26 n4 p247-51 Sum 1986
 DE: Electronic-Classrooms; Elementary-Education; Individualized-Reading; Interdisciplinary-Approach; Microcomputers-; Online-Systems; Reading-Programs; Student-Motivation
 DE: *Childrens-Literature; *Computer-Assisted-Instruction; *Computer-Software; *Programed-Instructional-Materials; *Reading-Attitudes; *Reading-Instruction
 AB: Using current technology and learning theory, computer-controlled literature programs have been and will be developed that allow children to interact with literature. This technique will help students' reading concepts fall into place more rapidly and gain the interest of those who do not respond well to traditional print media. (SRT)

AN: ED300766
 AU: Balajthy,-Ernest
 TI: Can Computers Be Used for Whole Language Approaches to Reading and Language Arts?
 PY: 1988
 NT: 19 p.; Paper presented at the Annual Meeting of the Keystone State Reading Association (Hershey, PA, November 4-8, 1988).
 PR: EDRS Price - MF01/PC01 Plus Postage.
 DE: Computer-Software; Educational-Principles; Elementary-Education; Language-Arts; Writing-Processes
 DE: *Computer-Uses-in-Education; *Holistic-Approach; *Reading-Instruction; *Writing-Instruction
 AB: Holistic approaches to the teaching of reading and writing, most notably the Whole Language movement, reject the philosophy that language skills can be taught. Instead, holistic teachers emphasize process, and they structure the students' classroom activities to be rich in language experience. Computers can be used as tools for whole language experiences in reading and writing, based on principles of holistic language instruction. Classroom reading should center on children's literature rather than basal stories, and software of popular children's literature is available. Teacher feedback for writing should be provided during, not after, the writing process. For this, computer-based revision and editing programs are available for a wide variety of word processing software, giving feedback on grammar, usage, style, and organization. The transition from oral language to print should be as natural as possible, favoring guided language experience over direct instruction in subskills. Several computer programs allow children to create their own stories on the computer, then read the stories back to the children using voice synthesis. Writing should culminate in publishing in order for

children to develop a sense of authorship. Desktop publishing is a key computer-based application for developing this sense of authorship in children. These are only a few of the ways in which computers can be used in the whole language classroom. (A bibliography of information on computers and whole language, and a list of educational software are appended.) (MM)

AN: ED268485

AU: Balajthy,-Ernest

TI: Expert Systems: A Challenge for the Reading Profession.

PY: 1986

NT: 14 p.; Paper presented at the Annual Meeting of the International Reading Association (31st, Philadelphia, PA, April 13-17, 1986). Research also partially funded by the Joint Advisory Council of the New York United University Professions and State University of New York.

PR: EDRS Price - MF01/PC01 Plus Postage.

DE: Computer-Managed-Instruction; Reading-Research; Teaching-Methods; Technological-Advancement

DE: *Computer-Assisted-Instruction; *Computer-Software;

*Expert-Systems; *Reading-Diagnosis; *Reading-Instruction

AB: The expert systems are designed to imitate the reasoning of a human expert in a content area field. Designed to be advisors, these software systems combine the content area knowledge and decision-making ability of an expert with the user's understanding and knowledge of particular circumstances. The reading diagnosis system, the RD2P System (Reading Difficulties--Diagnosis and Prescription) based on an expert system shell, guides teachers to an understanding of the possible problems underlying a student's reading difficulties and suggests possible instructional methods to solve those problems.

Advantages of the expert systems are that they (1) allow an organization to place untrained staff in key decision-making positions, (2) free professionals from information processing overload so that they can provide services that only humans can offer, (3) bring the best and most expensive of expertise to bear on a problem, (4) are designed so as not to overlook remote possibilities, (5) can be easily updated as new knowledge becomes available, (6) can be used for teaching purposes, and (7) raise questions about the field of expertise and can pinpoint areas where additional research is needed. (Teacher observation data are appended.) (EL)

AN: ED298937

AU: Balajthy,-Ernest

TI: Recent Trends in Minicomputer-Based Integrated Learning Systems for Reading and Language Arts Instruction.

PY: 1988

NT: 27 p.; Paper presented at the Rutgers University Spring Reading Conference (New Brunswick, NJ, March 1988).

PR: EDRS Price - MF01/PC02 Plus Postage.

DE: Compensatory-Education; Elementary-Secondary-Education;
Teacher-Attitudes

DE: *Computer-Assisted-Instruction; *Courseware-; *Language-Arts;
*Minicomputers-; *Reading-Instruction

AB: This paper discusses minicomputer-based ILSs (integrated learning systems), i.e., computer-based systems of hardware and software. An example of a minicomputer-based system in a school district (a composite of several actual districts) considers hardware, staffing, scheduling, reactions, problems, and training for a subskill-oriented reading program for compensatory education students. Specific ILS software packages are then described: (1) the PLATO/WICAT System 300 for primary reading, reading comprehension, writing, language arts (with language arts skills, spelling, and sentence combining components), English as a Second Language, and other academic subjects; (2) the Computer Curriculum Corporation's MICROHOST system for mathematics, reading, language arts, and computer literacy from grade 1 through adult; (3) Houghton Mifflin's Dolphin Curriculum, which is designed to supplement teacher-directed instruction with computer-assisted instruction in reading and language arts skills; and (4) DEGEN Systems' TOAM Computer Aided Instruction System for mathematics and multiple choice drill instruction. The appendix lists publisher, former names, systems software, instructional components, and hardware configurations for each system. (8 references) (MES)

AN: EJ379920

AU: Balajthy, -Ernest

TI: Computers and Instruction: Implications of the Rising Tide of Criticism for Reading Education.

PY: 1988

JN: Reading-Research-and-Instruction; v28 n1 p49-59 Fall 1988

AV: UMI

DE: Educational-Technology; Elementary-Secondary-Education;
Reading-Processes; Reading-Research; Technological-Advancement

DE: *Computer-Assisted-Instruction; *Computers-;
*Reading-Instruction

AB: Examines two major reasons that schools have adopted computers without careful prior examination and planning. Surveys a variety of criticisms targeted toward some aspects of computer-based instruction in reading in an effort to direct attention to the beneficial implications of computers in the classroom. (MS)

AN: EJ364718

AU: Balajthy, -Ernest

TI: What Does Research on Computer-Based Instruction Have to Say to the Reading Teacher?

PY: 1987

JN: Reading-Research-and-Instruction; v27 n1 p54-65 Fall 1987

AV: UMI

DE: Elementary-Secondary-Education; Reading-Improvement;
Reading-Research; Reading-Skills; Student-Motivation;
Teaching-Methods; Theory-Practice-Relationship; Word-Processing
DE: *Computer-Assisted-Instruction; *Computer-Uses-in-Education;
*Instructional-Effectiveness; *Reading-Achievement;
*Reading-Instruction

AB: Examines questions typically asked about the effectiveness of computer-based reading instruction, suggesting that these questions must be refined to provide meaningful insight into the issues involved. Describes several critical problems with existing research and presents overviews of research on the effects of computer-based instruction on achievement and motivation. (SKC)

AN: ED285131

AU: Balajthy, -Ernest

TI: Design and Construction of Computer-Assisted Instructional Material: A Handbook for Reading/Language Arts Teachers.

PY: 1987

NT: 66 p.

PR: EDRS Price - MF01/PC03 Plus Postage.

DE: Computer-Software; Educational-Technology;
Elementary-Secondary-Education

DE: *Computer-Assisted-Instruction; *Computer-Uses-in-Education;
*Language-Arts; *Reading-Instruction

AB: Intended for reading and language arts teachers at all educational levels, this guide presents information to be used by teachers in constructing their own computer assisted educational software using the BASIC programming language and Apple computers. Part 1 provides an overview of the components of traditional tutorial and drill-and-practice computer assisted instructional (CAI) software. A history of CAI design follows, beginning with linear programs, and proceeding to branching programs, frame protocols (information frames, question frames, and prompts), and types of feedback. Sources of information for the history section and a list of commercial software are included. Part 2 outlines the basics of planning and constructing CAI software in nine steps. Step 1 involves unit plans, with substeps including choice of topic, goal statement formulation, and topic research. Lesson plans are discussed in Step 2, and the rough draft stage is dealt with in Step 3. Screen Grids, where the CAI author begins to transfer contents of the draft to the screen, are exemplified in Step 4, while Step 5 covers the program rough draft. Steps 6 through 8 focus on the program's different pages, and Step 9 shows how to finish and link the screen displays. A section describing sources of information, including software and books, follows the text. The remainder of the document consists of 14 figures and diagrams that illustrate screen design and provide sample BASIC programs. (SKC)

AN: ED273942
 AU: Belajthy, -Ernest
 TI: Implications of Artificial Intelligence Research for Human-Computer Interaction in Reading Instruction.
 PY: 1986
 NT: 9 p.; Paper presented at the Annual Meeting of the College Reading Association (Lexington, KY, October 23-26, 1986).
 PR: EDRS Price - MF01/PC01 Plus Postage.
 DE: Computer-Managed-Instruction; Curriculum-Design; Elementary-Education; Programed-Tutoring
 DE: *Artificial-Intelligence; *Computer-Assisted-Instruction; *Courseware-; *Reading-Instruction
 AB: Noting that many language arts teachers have rejected tutorial software because of its inability to interact effectively with students, this paper explores implications of artificial intelligence research for human/computer interaction in reading instruction. Limitations of "exact match" curriculum designs in contemporary attempts to provide computerized interaction are surveyed and critiqued, and the importance of drill and practice to the development of language skills is emphasized. It is proposed that open-ended curriculum designs, which are process oriented, may help counter the limitations in developing adequate interactive programs. Finally, research questions in the development of artificial intelligence natural language systems are presented as central to the problem of "intelligent" human/computer interaction. The concluding comments assert that computers must be taught to simulate the same cognitive processes as occur in humans if meaningful interaction is to take place. (JD)

AN: EJ345132
 AU: Blair, -Timothy-R.; And-Others
 TI: Microcomputers: Another False Prophet?
 PY: 1986
 JN: Reading-Research-and-Instruction; v26 n1 p58-61 Fall 1986
 AV: UMI
 DE: Elementary-Secondary-Education; Research-Needs
 DE: *Computer-Assisted-Instruction; *Microcomputers-; *Program-Effectiveness; *Reading-Instruction; *Reading-Research
 AB: Argues that while computers have the potential to become important in the teaching of reading, the computer revolution cannot happen until support is provided to prepare teachers to use microcomputers and to integrate software into regular reading programs. (FL)

AN: EJ367770
 AU: Blanchard, -Jay-S.
 TI: Instructional Design Issues in Computer-Based Reading:

Reinforcement and Objectives.

PY: 1987

JN: Computers-in-the-Schools; v4 n1 p25-35 Spr 1987

DE: Cognitive-Development; Educational-Objectives;

Elementary-Secondary-Education; Higher-Education;

Instructional-Design; Literature-Reviews; Student-Characteristics

DE: *Computer-Assisted-Instruction; *Learning-Motivation;

*Reading-Instruction; *Reading-Research; *Reinforcement-

AB: This review of cognitive development research in the area of computer-based reading instruction focuses on reinforcement and instructional objectives. Differences between extrinsic and intrinsic reinforcement and motivation are discussed, types of objectives and learner characteristics are described, and implications for instructional design are suggested. (40 references) (LRW)

AN: EJ342446

AU: Broadley, -Kathy

TI: Past Practice and Possibilities with Computers.

PY: 1986

JN: Australian-Journal-of-Reading; v9 n1 p41-50 Mar 1986

DE: Elementary-Secondary-Education; Learning-Theories

DE: *Computer-Assisted-Instruction; *Learning-Strategies;

*Reading-Instruction

AB: Notes that early research on using computers for teaching reading was restricted by the current theories on how reading is learned but that recent developments reveal exciting possibilities for using computers in reading. (FL)

AN: ED282175

AU: Feldmann, -Shirley-C.; Fish, -Marian-C.

TI: Reading Comprehension of High School Students on Print vs. Microcomputer-Generated Text.

PY: 1987

NT: 9 p.; Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).

PR: EDRS Price - MF01/PC01 Plus Postage.

DE: Age-Differences; High-Schools; Junior-High-Schools;

Microcomputers-; Reading-Ability; Reading-Attitudes;

Reading-Research; Screens-Displays; Sex-Differences

DE: *Computer-Assisted-Instruction; *Media-Adaptation;

*Media-Selection; *Reader-Text-Relationship;

*Reading-Comprehension

AB: A study examined the relative comprehension difficulty and the influence of reader and text characteristics on reading comprehension for texts presented in traditional print or on the microcomputer screen. Two urban samples of mixed ethnicity were used, 95 low reading level high school students (grades 9 through 12) and 112 high ability eighth grade students. Students read two

types of text: (1) text that disseminated information and required recall or inferences and (2) text requiring written responses to specific directions. Each subject read one type of text passage presented either on paper or on microcomputer screen. Students also completed a questionnaire that measured their interest in and experience with the type of reading tasks they performed and elicited their subjective evaluations of the text. In the high ability eighth grade sample, results for media and reader characteristics (interest and experience) showed no significant differences for any variable. In the high school sample however, the microcomputer group fared significantly better than the print group on comprehension, and males using microcomputers comprehended better than females on the direction following task. In both media, strong readers found the texts easier to read and found it easier to go from the reading passages to their answer sheets than did weak readers. Most microcomputer users reported no difficulties in keeping their places on the computer screen, but a quarter said that the screen hurt their eyes. These results support presentation of curriculum materials in either medium. (SKC)

AN: EJ367831

AU: Gillingham, -Mark-G.

TI: Text in Computer-Based Instruction: What the Research Says.

PY: 1988

JN: Journal-of-Computer-Based-Instruction; v15 n1 p1-6 Win 1988

AV: UMI

DE: Cloze-Procedure; Courseware-; Elementary-Secondary-Education; Futures-of-Society; Literature-Reviews; Reader-Text-Relationship; Reading-Rate; Reading-Strategies

DE: *Computer-Assisted-Instruction; *Reading-Comprehension; *Reading-Research

AB: Discusses text presentation in computer-based instruction and reviews research that has been done in this area. Topics discussed include length of text, amount of text presented at one time, rate of text presentation, color, text comprehension, text structure, reader comprehension, and new directions for computer-based text. (23 references) (LRW)

AN: ED299548

AU: Goldman, -Janet-M.

TI: The Use of Computers versus Basal Readers for Reading Comprehension in the Primary Grades.

PY: [1988]

NT: 18 p.

PR: EDRS Price - MF01/PC01 Plus Postage.

DE: Grade-2; Primary-Education; Reading-Improvement; Reading-Instruction

DE: *Basal-Reading; *Computer-Assisted-Instruction; *Reading-Comprehension

AB: A 10-week study examined whether the use of computers could be more effective than basal readers for improving reading comprehension at the primary level. Subjects, 12 students from the second grade, were divided into two groups, 6 in the experimental group using computers only and 6 in the control group using basal readers only. Both groups used the H.B.J. Basal Reading Program's workbook. The students were given pre-and posttests using the Gates-McGinitie Reading Test, vocabulary and comprehension sub-tests, H.B.J. Reading Program's unit tests, and five selections on the computer using materials developed by Janet Goldman and released by Hartley Courseware. Results suggested that the use of computer-assisted instruction may be more effective than basal readers for improving reading comprehension at the primary level. (Four data charts are included.) (RAE)

AN: EJ373813

AU: Grabe,-Mark; Dosmann,-Mark

TI: The Potential of Adventure Games for the Development of Reading and Study Skills.

PY: 1988

JN: Journal-of-Computer-Based-Instruction; v15 n2 p72-77 Spr 1988

AV: UMI

DE: Ability-Grouping; Analysis-of-Variance; Connected-Discourse; Grade-6; Instructional-Design; Instructional-Improvement; Intermediate-Grades; Learning-Activities; Metacognition-; Microcomputers-; Prose-; Study-Skills

DE: *Computer-Games; *Instructional-Innovation; *Reading-Skills

AB: Considers the instructional potential of computer adventure games to develop text-processing skills. Design improvements to increase metacognitive skills are discussed, a prototype adventure game utilizing intact prose is described, and a study using the game with sixth-grade readers of varying ability is reported. (LRW)

AN: ED295643

AU: Greene,-Elinor-C.; And-Others

TI: Effects of New Computer Technology on Increases in Children's Word Recognition Automaticity.

PY: 1988

NT: 19 p.; In: Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (New Orleans, LA, January 14-19, 1988. For the complete proceedings, see IR 013 331.

PR: EDRS Price - MF01/PC01 Plus Postage.

DE: Comparative-Analysis; Elementary-Education; Elementary-School-Students; Instructional-Design; Pretests-Posttests; Reading-Difficulties; Reading-Research; Word-Study-Skills

DE: *Computer-Assisted-Instruction; *Context-Clues;

*Decoding-Reading; *Instructional-Effectiveness;

*Intermode-Differences; *Word-Recognition

AB: This study compared the effectiveness of two computer-based techniques for improving word recognition automaticity in children with mild reading difficulties. One of the techniques provided practice in identifying individual words out of context, while the other technique, referred to as repeated reading, provided practice reading specific words in context. Subjects were third and fourth graders with reading skills at approximately the 18th percentile. All children experienced practice using both techniques applied to different sets of words. The repeated reading technique was more effective than the context-free method in increasing the number of words in the children's sight vocabularies under both the context-free and the within-context assessments. The repeated reading technique also required less time per word to reach a specific mastery criteria, and thus was a more efficient instructional method. The text is supplemented by three tables. (EW)

AN: EJ375263

AU: Henney, -Maribeth

TI: Reading and Writing Interactive Stories.

PY: 1988

JN: Computing-Teacher; v15 n8 p45-47, 60 May 1988

AV: UMI

DE: Curriculum-Development; Elementary-Education;

Listening-Skills; Oral-Language; Reading-Skills;

Writing-Processes; Writing-Skills

DE: *Authoring-Aids-Programing; *Computer-Assisted-Instruction;

*Courseware-; *Creative-Writing; *Reading-Writing-Relationship

AB: Describes a project designed to teach elementary students to write interactive stories using an authoring system called Story Tree. Benefits of the project are discussed, including the development of oral language, listening, reading, and writing skills; and problems with the authoring system, the writing process, and the curriculum integration are reviewed. (LRW)

AN: ED275991

AU: Lancy, -David-F.; Hayes, -Bernard-L.

TI: Building an Anthology of "Interactive Fiction."

PY: 1986

NT: 15 p.; Paper presented at the Annual Meeting of the American Educational Research Association (67th, San Francisco, CA, April 16-20, 1986).

PR: EDRS Price - MF01/PC01 Plus Postage.

DE: Critical-Thinking; Elementary-Secondary-Education;

Motivation-Techniques; Reading-Instruction; Recreational-Reading

DE: *Computer-Assisted-Instruction; *Computer-Software;

*Independent-Reading; *Problem-Solving; *Reading-Attitudes;

*Reading-Comprehension

AB: A study determined whether students with an average interest in reading would become more interested in reading if they used interactive fiction computer games involving a quest or solving a problem in conjunction with required reading. Eight students in grades five through eight participated in a workshop that met 3 hours a day, 4 days a week, for 4 weeks. The students began with the easier games that involve little text reading and gradually moved on to the most sophisticated text-oriented interactive fiction. An observer helped the students to overcome problems in solving the quest so that the students would keep reading. All students were deeply engrossed in these programs, and the only condition that diminished student interest or motivation was an inability, after repeated attempts, to move ahead or solve a dilemma in the quest. None of the students reacted negatively to the considerable amount of reading required of most of the programs. Results suggest (1) students with no more than average interest in reading will spend large amounts of time engaged in interactive fiction that requires heavy amounts of reading if they are successful at carrying forward with the quest and (2) interactive fiction could be used to encourage students to read independently. (A list of the interactive fiction computer programs used in the study is appended.) (SRT)

AN: EJ374827

AU: MacGregor, -S.-Kim

TI: Use of Self-Questioning with a Computer-Mediated Text System and Measures of Reading Performance.

PY: 1988

JN: Journal-of-Reading-Behavior; v20 n2 p131-48 1988

AV: UMI

DE: Grade-3; Programed-Instructional-Materials; Reading-Research

DE: *Computer-Assisted-Instruction; *Questioning-Techniques; *Reading-Strategies

AB: Reports a study in which a computerized-text system (CTS) was developed to facilitate students' question-asking during reading. Results suggest that third grade students' use of a CTS to read text and ask questions results in gains in reading performance. (JAD)

AN: EJ334731

AU: Norton, -Priscilla; Resta, -Virginia

TI: Investigating the Impact of Computer Instruction on Elementary Students' Reading Achievement.

PY: 1986

JN: Educational-Technology; v26 n3 p35-41 Mar 1986

AV: UMI

DE: Age-Differences; Analysis-of-Covariance; Computer-Software; Elementary-Education; Reading-Achievement;

Student-Characteristics; Tables-Data

DE: *Computer-Assisted-Instruction; *Computer-Simulation;

*Intermode-Differences; *Problem-Solving; *Reading-Instruction
 AB: This study investigated the impact of integrated learning systems, problem solving software, and simulation software on elementary students' reading performance. Results indicate students entering fourth through sixth grade profited more from instruction supplemented by problem-solving and simulation software than from skills instruction. Results were less definitive for students entering third grade. (MBR)

AN: ED270716

AU: Palmer,-Douglas-J.; And-Others

TI: A Computer-Assisted On-Line Investigation of Comprehension Monitoring.

PY: 1986

NT: 19 p.

PR: EDRS Price - MF01/PC01 Plus Postage.

DE: Cognitive-Processes; Content-Area-Reading; Grade-5;

Intermediate-Grades; Reading-Ability; Reading-Habits;

Reading-Rate; Reading-Research; Reading-Skills

DE: *Computer-Assisted-Testing; *Metacognition-;

*Reading-Comprehension; *Reading-Processes; *Reading-Strategies

AB: A study examined the use of lookback strategy (selective rereading of text material to clarify inconsistent information) employed by good and poor readers attempting to monitor their own reading comprehension. Using microcomputers, narrative and expository texts containing inconsistencies were presented one line at a time on a "page" of screen. The reading times, use of lookbacks, and verbally reported identification of inconsistencies of five classes of fifth grade pupils were examined. Results for both types of text in the three areas measured indicate the following: (1) good readers spent less time on text than did poor readers, and both groups spent less time on lookbacks than on text; (2) good readers used lookbacks more often and more strategically than did poor readers; (3) when reading expository text, poor readers used a similar number of lookbacks regardless of the presence of inconsistencies; and (4) good readers more readily identified more inconsistencies than did poor readers. Strategic use of lookbacks, rather than reading time, appears to be a sensitive behavioral indicator of good readers identification of inconsistent information, whereas neither reading time nor use of lookbacks appears to relate to poor readers' verbal identification of inconsistencies. A list of references and tables of data conclude the report. (LLZ)

AN: ED286162

AU: Reinking,-David, Ed.

TI: Reading and Computers: Issues for Theory and Practice. Computers and Education Series.

PY: 1987

AV: Teachers College Press, Teachers College, Columbia

University, 1234 Amsterdam Ave., New York, NY 10027 (\$22.95).

NT: 205 p.; Foreword by George E. Mason.

PR: Document Not Available from EDRS.

DE: Artificial-Intelligence; Cognitive-Processes;
Computer-Simulation; Elementary-Secondary-Education;
Eye-Movements; Higher-Education; Language-Arts;
Reader-Text-Relationship; Reading-Comprehension;
Reading-Consultants; Reading-Improvement; Reading-Research;
Reading-Strategies; Reading-Teachers;
Reading-Writing-Relationship

DE: *Computer-Assisted-Instruction; *Computer-Uses-in-Education;
*Reading-Instruction; *Reading-Processes;
*Theory-Practice-Relationship

AB: Embodying two themes--that the computer can become an even more exciting instructional tool than it is today, and that the research necessary for developing the potential of this tool is already underway, this book explores the theoretical, research, and instructional issues concerning computers and reading. The titles of the essays and their authors are as follows: (1) "Computers, Reading, and a New Technology of Print" (D. Reinking); (2) "The Construct of Legibility in Electronic Reading Environments" (D. B. Daniel and D. Reinking); (3) "Implications of Artificial Intelligence Research for Human-Computer Interaction in Reading Instruction" (E. Balajthy); (4) "Computers and Reading Research" (M. L. Kamil); (5) "Computer Analysis of Written Materials" (L. T. Frase); (6) "Two Examples of Computer-Based Research on Reading: Eye Movement Monitoring and Computer-Aided Reading" (G. W. McConkie and D. Zola); (7) "Redefining a Basic CAI Technique to Teach Reading Comprehension" (M. A. Siegel and D. M. Davis); (8) "Computers, Simulated Cases, and the Training of Reading Diagnosticians" (J. F. Vinsonhaler, A. B. Weinshank, C. C. Wagner, and R. M. Polin); (9) "Using Computer-Simulated Instruction to Study Preservice Teachers' Thought Processes" (D. Alvermann); (10) "Computer Speech in Reading Instruction" (R. K. Olson and B. Wise); and (11) "Using Computers as an Integral Aspect of Elementary Language Arts Instruction: Paradoxes, Problems, and Promise" (L. Miller and J. D. Burnett). Biographies of the contributors and an index are appended. (SKC)

AN: EJ353008

AU: Reynolds,-Ralph-E.; Baker,-Dale-R.

TI: The Utility of Graphical Representations in Text: Some Theoretical and Empirical Issues.

PY: 1987

JN: Journal-of-Research-in-Science-Teaching; v24 n2 p161-73 Feb 1987

AV: UMI

DE: Science-Education; Secondary-Education; Skill-Development

DE: *Computer-Uses-in-Education; *Graphs-; *Reading-Strategies;
*Science-Instruction; *Secondary-School-Science

AB: Explains a study that proposed and tested how graphical representations influence what is learned and recalled from text. Results highlighted the importance of graph-focusing strategies for text learning and support the creative use of interactive computer presentation. (ML)

AN: EJ362182

AU: Schaudt, -Barbara-A.

TI: The Use of Computers in a Direct Instruction Reading Lesson.

PY: 1987

JN: Reading-Psychology; v8 n3 p169-78 1987

AV: UMI

DE: Computer-Uses-in-Education; Elementary-Secondary-Education; Models-; Psychological-Studies; Reading-Assignments; Reading-Research

DE: *Computer-Assisted-Instruction; *Reading-Instruction; *Teacher-Effectiveness

AB: Contends that the addition of the microcomputer as a learning tool may enhance student learning and increase teacher effectiveness using the direct instruction approach. Discusses patterns associated with teacher effectiveness, practical application of the direct instruction model, and the incorporation of computer assisted instruction into a direct instruction plan. (SKC)

AN: EJ350602

AU: Scott, -Diana; Barker, -Jeanne

TI: Guidelines for Selecting and Evaluating Reading Software: Improving the Decision Making Process.

PY: 1987

JN: Reading-Teacher; v40 n9 p884-87 May 1987

AV: UMI

DE: Elementary-Education

DE: *Computer-Assisted-Instruction; *Computer-Software; *Decision-Making; *Evaluation-Criteria; *Reading-Instruction; *Reading-Programs

AB: Focuses on the selection and evaluation of courseware for use with a reading program. Gives examples of courseware to support the ideas presented, together with a sample checklist for software evaluation. (FL)

AN: ED274948

AU: Sinatra, -Richard; Geisert, -Gene

TI: Stressing Holistic Approaches to the Teaching of Reading and Writing Using Microcomputers.

PY: 1986

NT: 12 p.; Paper presented at the Annual Meeting of the Southwest Regional Conference of the International Reading Association (14th, San Antonio, TX, January 30-February 1, 1986).

PR: EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

DE: Computer-Software; Decision-Making; Problem-Solving;
Reading-Instruction; Teaching-Methods; Word-Processing;
Writing-Instruction

DE: *Computer-Assisted-Instruction; *Courseware-;
*Holistic-Approach; *Reading-Comprehension; *Writing-Processes

AB: An examination of the value of using more sophisticated computer programs in the language arts program led to the design and development of "Thinking Networks," which provide the teacher with a new tool for teaching through nonverbal representation.

Using microcomputers to improve reading and writing instruction can incorporate the holistic approach to language learning, which emphasizes (1) the comprehending and composing of words, sentences, and paragraphs within the context of a complete discourse; (2) the synthesis of thinking; and (3) the use of language within real social contexts. The "Think Network Program" consists of software with which students can interact and, in keeping with the newest efforts to enhance the development of problem-solving, uses a graphic approach leading students to understand how a text is organized. It also ensures that students read complete stories or content area selections before booting up the disk. The comprehension work completed during network building shows students how the major and minor ideas of a reading selection are related. Other emerging holistic software programs are also requiring students to deal with whole units of text and to use decision-making, evaluation, and synthesis skills. (JK)

AN: ED268526

AU: Spillman, -Carolyn-V.; And-Others

TI: Writing via Reading Software: An Empirical Study.

PY: 1986

NT: 22 p.; Paper presented at the Annual Meeting of the Southern Association on Children Under Six (37th, Orlando, FL, March 5-8, 1986).

PR: EDRS Price - MF01/PC01 Plus Postage.

DE: Comparative-Analysis; Computer-Software;
Language-Experience-Approach; Primary-Education;
Program-Effectiveness

DE: *Computer-Assisted-Instruction; *Reading-Instruction;
*Reading-Writing-Relationship; *Writing-Improvement;
*Writing-Instruction; *Writing-Research

AB: A study evaluated the effects of one reading software program on the written language production of kindergarten and first grade students. Subjects were approximately 600 students from six different schools--three using the computerized reading program, Writing to Read, and three comparable in demographics, but not using the program. Stories written on the topics of the children's choice were gathered from all students during a two-week period. The writing samples were evaluated for (1) number of communication units, (2) mean number of words per

communication unit, (3) and stages of spelling generalizations. Students in the Writing to Read program also had daily access to an IBM typewriter and daily language experience through writing activities. Control group students had no computers or typewriters and were infrequently exposed to language experience activities. Results of analyses showed that writing samples from the students using the computer program contained twice as many communication units as those of the control group. Additional differences favoring the computer group were found in all measures. (FL)

AN: ED281163

AU: Strickland,-Dorothy-S.; And-Others

TI: Using Computers in the Teaching of Reading. Computers in the Curriculum Series.

PY: 1987

AV: Teachers College Press, 1234 Amsterdam Ave., New York, NY 10027 (\$16.95).

NT: 240 p.; Foreword by George E. Mason.

PR: Document Not Available from EDRS.

DE: Computer-Managed-Instruction; Copyrights-; Curriculum-Development; Databases-;

Elementary-Secondary-Education; Higher-Education;

Microcomputers-; Programed-Tutoring; Programing-Languages;

Readability-; Reading-Teachers; Word-Processing

DE: *Computer-Assisted-Instruction; *Computer-Software;

*Reading-Instruction; *Reading-Processes; *Reading-Tests

AB: Noting that the proliferation of computers in the schools requires teachers to know the best ways to use them, this book shows how the computer can be used in a reading and language arts curriculum as tool, tutor, and tutee with currently available software. Chapter one defines the reading process in terms of its relationship to background experiences and language cue systems and, based on this definition, describes the productive use of computers. Chapters two and three describe how the computer can be used as a writing tool and a teacher's tool in a reading and language arts curriculum. Chapters four and five delineate how the computer can be used as a tutor--for drill and practice and through interactive reading and writing software packages. Chapter six discusses computer use as a tutee and software programs that students can manipulate as well as two programming languages, LOGO and BASIC, for reading and thinking skill development. Chapter seven introduces practical considerations for organizing and evaluating computer programs. Finally, chapter eight discusses critical issues and trends related to the computer and the teaching of reading and language arts. A guide to resources providing software and computer-related information is appended. (SRT)

AN: EJ368576

AU: Wepner, -Shelley-B.
 TI: Reading, Writing, and Word Processing.
 PY: 1987
 JN: Reading-Psychology; v8 n4 p295-309 1987
 AV: UMI
 DE: Computer-Assisted-Instruction; Editing-;
 Electronic-Equipment; Higher-Education; Keyboarding-Data-Entry;
 Reading-; Secondary-Education; Writing-Exercises; Writing-Skills
 DE: *Computers-; *Reading-Writing-Relationship;
 *Revision-Written-Composition; *Word-Processing;
 *Writing-Composition
 AB: Addresses how word processing, with its prevision, writing,
 and revision tools, facilitates connections between reading and
 writing. Suggests that with or without electronic tools, students
 need to be critical readers of their own writing. (JK)

AN: EJ367771
 AU: Wepner, -Shelley-B.; Kramer, -Steven
 TI: Organizing Computers for Reading Instruction.
 PY: 1987
 JN: Computers-in-the-Schools; v4 n1 p53-66 Spr 1987
 DE: Courseware-; Educational-Facilities; Educational-Finance;
 Educational-Planning; Elementary-Secondary-Education;
 Government-School-Relationship; Inservice-Teacher-Education;
 Needs-Assessment; Program-Evaluation; Program-Implementation;
 School-Districts; Staff-Development
 DE: *Computer-Assisted-Instruction; *Curriculum-Development;
 *Language-Arts; *Reading-Instruction
 AB: Presents four steps for integrating computer technology into
 a school district's reading and language arts curriculum for
 elementary and secondary schools: (1) needs assessment; (2)
 planning; (3) implementation; and (4) evaluation. Topics
 discussed include personnel, budget, facilities, government
 mandates, computer hardware selection, software selection, and
 staff development. (25 references) (LRW)

AN: ED289157
 AU: Whitmer, -Jean-Elizabeth; Miller, -Margaret
 TI: The Effects of Writing on Reading Abilities: A Comparison of
 First Grade Writing Programs with and without Computer
 Technology.
 PY: 1987
 NT: 92 p.; Paper presented at the Annual Reading Conference
 (18th, Greeley, CO, October 16, 1987).
 PR: EDRS Price - MF01/PC04 Plus Postage.
 DE: Comparative-Analysis; Grade-1; Instructional-Effectiveness;
 Language-Arts; Primary-Education; Reading-Achievement;
 Reading-Comprehension; Reading-Research; Teaching-Methods;
 Writing-Instruction
 DE: *Computer-Assisted-Instruction; *Reading-Instruction;

***Reading-Writing-Relationship**

AB: The IBM Writing to Read program for children in kindergarten and first grade uses computers with voice output and IBM selectric typewriters to encourage writing and hence reading development. A study examined whether increased writing activity without the use of the technology would produce similar gains in reading. A classroom from the IBM program (group A) and an experimental writing classroom (group B) were compared with each other and with a control classroom (group C). Group A used a lab five hours per week for computer-based instruction in sound-symbol relationships, followed by structured story-writing and reading. Group B received four weekly hours of structured story-writing followed by reading, discussing, and expanding the stories. Group C spent approximately two weekly hours in their usual writing activities. Scores showed that the IBM group's gains in Reading Comprehension and Reading Total were significantly higher than those of the control group. Mean gains for group B fell between the other two groups, differing significantly from neither. Among girls, mean gains were greatest in group A and, surprisingly, lowest in group B; however among boys, mean gains were highest in group A, lowest in group C. This suggests that structured writing time, regardless of technology, may have increased their reading abilities. The amount of time scheduled for structured writing appeared to be an important factor. (Student writing samples are included.) (Author/JG)

AN: ED272859

AU: Zuk,-Dorie; Danner,-Fred

TI: The Effects of Microcomputers on Children's Attention to Reading Tasks.

PY: 1986

NT: 19 p.; Paper presented at the Annual Meeting of the American Educational Research Association (67th, San Francisco, CA, April 16-20, 1986).

PR: EDRS Price - MF01/PC01 Plus Postage.

DE: Attention-; Books-; Comparative-Analysis; Elementary-Education; Grade-3; Grade-5; Reading-Achievement; Reading-Comprehension; Student-Attitudes

DE: *Attention-Span; *Computer-Assisted-Instruction;

*Microcomputers-; *Reading-Research; *Time-on-Task

AB: A study investigated the effects of microcomputers on children's attention to reading tasks and the relationship between previous reading achievement and grade level on such attentional behavior. Fifty-five third and fifth graders read two stories each, one presented on a microcomputer and one presented in print. Television cartoons and rock music were presented as a distraction during the readings. Videotapes of the subjects were used to determine each subject's frequency of instances off task (FOT), cumulative time off task (TOT), and total completion time (TCT). The results indicated subjects took longer to complete the story presented on the microcomputer than one presented in text,

although more subjects preferred the microcomputer presentation to the text presentation. Fifth graders were off task fewer times than third graders and completed the task faster than the third graders. In addition, significant differences were found between good, average, and poor reading achievement groups for FOT, TCT, and comprehension scores. (HTH)

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